

## Chapter 7

### International Factor Movements

## Preview

- International labor mobility (migration)
- Foreign direct investment and multinational firms
- Skipping material on international borrowing and lending (intertemporal trade)

7-2

## International Labor Mobility

- Movement of goods and services is one form of international integration.
- Another form of integration is international movements of factors of production.
- Look at causes and effects of labor migration.
  - ◆ Compare to trade in goods and services.

7-3

## International Labor Mobility

- Assumptions of factor mobility model
  - ◆ Two countries (Home and Foreign).
  - ◆ Two factors of production: land ( $T$ ) and labor ( $L$ ).
  - ◆ Both countries produce only one good.
  - ◆ Both countries have the same technology.
  - ◆ Home is relatively labor-abundant and Foreign is relatively land-abundant  $L/T > L^*/T^*$ .
  - ◆ Perfect competition in all markets.

7-4

## International Labor Mobility

**Figure 7-1**  
**An Economy's Production Function**  
 This production function,  $Q(T, L)$ , shows how output varies with changes in the amount of labor employed, holding the amount of land,  $T$ , fixed. The larger the supply of labor, the larger is output; however, the marginal product of labor declines as more workers are employed.

7-5

## International Labor Mobility

- On a fixed parcel of land, each worker becomes less productive as more workers are added.
  - ◆ The **marginal product of labor** decreases.
- Due to diminishing marginal product, productivity of labor depends on the quantity of labor employed.

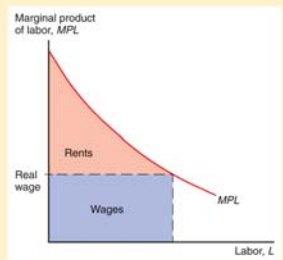
7-6

## International Labor Mobility

Figure 7-2

### The Marginal Product of Labor

The marginal product of labor declines with employment. The area under the marginal product curve equals total output. Given the level of employment, the marginal product determines the real wage; thus the total payment to labor (the real wage times the number of employees) is shown by the rectangle in the figure. The rest of output consists of land rents.



7-7

## International Labor Mobility

- The real wage paid to workers equals their marginal product.
- The area under the marginal product of labor curve equals the value of output produced, which equals the value of wages and rental income paid to factors.

7-8

## International Labor Mobility

- Foreign wage initially higher than domestic wage  $w^{A^*} > w^A$ .
  - ♦ Technology is the same across countries.
  - ♦ The domestic country is the relatively labor abundant country so the marginal product of domestic workers is less than for foreign workers.
- Domestic workers want to move to the foreign country.

7-9

## International Labor Mobility

- If allowed to, domestic workers will move to the foreign country until the marginal product of labor is the same in the two countries so that real wages become equal across countries.
  - ♦ Reduces domestic labor force and thus raises the domestic real wage.
  - ♦ Increases the foreign labor force and reduces the foreign real wage.

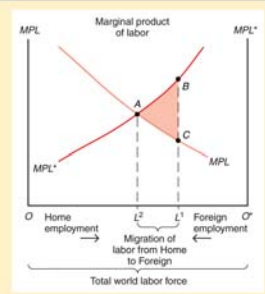
7-10

## International Labor Mobility

Figure 7-3

### Causes and Effects of International Labor Mobility

Initially  $OL^1$  workers are employed in Home, while  $L^1O^*$  workers are employed in Foreign. Labor migrates from Home to Foreign until  $OL^2$  workers are employed in Home,  $L^2O^*$  in Foreign, and wages are equalized.



7-11

## International Labor Mobility

- Labor migration across countries increases world output.
  - ♦ Foreign output rises by the area under its  $MPL^*$  curve from  $L^1$  to  $L^2$
  - ♦ Domestic output falls by the area under its  $MPL$  curve from  $L^2$  to  $L^1$
  - ♦ The value of world output is maximized when the marginal product of labor is the same across countries.

7-12

## International Labor Mobility

- Labor migration:
  - ♦ Leads to a convergence of real wages.
  - ♦ Increases the world's output as a whole.
  - ♦ Leaves some groups worse off:
    - Foreign workers and Home landlords (relatively scarce factor in each country) hurt.
    - Trade in factors has same income distribution effects as trade in goods.

7-13

## International Labor Mobility

- Trade in goods and factors
  - ♦ Suppose the countries produce two goods, one relatively labor-intensive and one relatively land-intensive.
  - ♦ Trade in goods offers an alternative to factor mobility: domestic country can export labor and import land by exporting labor-intensive good and importing land-intensive good.
  - ♦ Trade in goods could eliminate incentive for trade in factors by equalizing factor prices across countries.

7-14

## International Labor Mobility

Why aren't wages equal across countries?

1. Countries may produce different goods so that marginal product of labor need not be equal across countries.
2. Different technologies may affect the productivities of factors and thus the wages/rents paid to these factors.
3. Barriers to immigration.

7-15

## Immigration and the U.S. Economy

- Historical evidence suggests that:
  - ♦ Immigration occurred from countries with low real wages to countries with high real wages.
  - ♦ Real wage growth in source countries was much faster than in destination countries (with the exception of Canada).

7-16

## Immigration and the U.S. Economy

|                       | Real Wage, 1870<br>(U.S. = 100) | Percentage Increase<br>in Real Wage, 1870-1913 |
|-----------------------|---------------------------------|--|
| Destination Countries |                                 |  |
| Argentina             | 53                              | 51   |
| Australia             | 110                             | 1  |
| Canada                | 86                              | 121  |
| United States         | 100                             | 47   |
| Origin Countries      |                                 |  |
| Ireland               | 43                              | 84   |
| Italy                 | 23                              | 112  |
| Norway                | 24                              | 193  |
| Sweden                | 24                              | 250  |

Source: Jeffrey G. Williamson, "The Evolution of Global Labor Markets Since 1830: Background Evidence and Hypotheses," *Explorations in Economic History* 32 (1995), pp. 141-196.

7-17

## Immigration and the U.S. Economy

- In the past generation, immigration in the US has increased substantially, especially among workers with the lowest and the highest education levels.
  - ♦ The largest increase in immigration occurred among workers with the lowest education levels, making less educated worker more abundant,
  - ♦ possibly causing a widening wage gap between low educated workers and high educated workers.

7-18

## Immigration and the U.S. Economy

|                      | Immigrants as Percent of Native-Born Workers, 1980 | Immigrants as Percent of Native-Born Workers, 1990 | Change, 1980-1990 |
|----------------------|--|--|-------------------|
| High school dropouts | 12.2   | 26.2   | 14.0              |
| High school          | 4.4  | 6.1  | 1.7               |
| Some college         | 5.8  | 6.9  | 1.1               |
| College              | 7.5  | 9.7  | 2.2               |

Source: George Borjas, Richard Freeman, and Lawrence Katz, "Searching for the Effect of Immigration on the Labor Market," *American Economic Review*, May 1996.

7-19

## Immigration and the U.S. Economy

- But immigration can not wholly explain the widening income distribution in the US.
- The fraction of US workers without a high school diploma fell, while that with a college education rose, during 1980–1990.
  - ♦ More highly educated workers became more abundant.
- So why did the wage of highly educated workers rise relative to that of low educated workers?
  - ♦ Possibly due to technological changes that made education more valuable to employers.

7-20

## Foreign Direct Investment

- What is **foreign direct investment (FDI)**?
  - ♦ A firm in one country creates or expands a subsidiary in another country.
  - ♦ Parent firm *directly controls or owns* a subsidiary in another.
- If a foreign company invests enough in a subsidiary, the two firms are a **multinational corporation**.
  - ♦ **Multinational firms** are active in multiple countries.
  - ♦ 10% or more ownership deemed sufficient to control operations.

7-21

## Foreign Direct Investment

- Ways to serve a foreign market:
  - ♦ Export: produce in home market and ship to foreign market.
  - ♦ FDI: produce in foreign market using a subsidiary.
  - ♦ License: produce in foreign market using a foreign firm.

7-22

## Theory of Multinational Corporations

- Why are multinational corporations created and why do they undertake direct foreign investment?
  1. Why is a good produced in two countries rather than in one country and then exported to the second country? Transportation costs and other barriers to trade influence the location of production.
  2. Why is production in different locations done by one firm rather than by separate firms? Often more profitable to conduct transactions within a single organization.

7-23

## Theory of Multinational Corporations

- When Does FDI Occur?
  - ♦ Logistics of coordinating activities across multiple locations can be challenging.
  - ♦ Ownership, location and internalization advantages help overcome these difficulties.
  - ♦ Operating as a multinational can be worthwhile, especially as information and communication technologies improve.

7-24

## Theory of Multinational Corporations

- Ownership Advantage
  - ◆ First need a reason why foreign market not served by a foreign firm.
  - ◆ Must be something that domestic firm does better than foreign firms – domestic firm must be special.
  - ◆ Examples: technology (unique product design, better product, lower cost), superior management or organization skills.
  - ◆ Implies possible benefits of FDI for host country.

7-25

## Theory of Multinational Corporations

- Location Advantage
  - ◆ Next need a reason why production should be located in the foreign market.
  - ◆ Must be something that makes production in foreign country better than production in domestic country – host must be special.
  - ◆ Examples: lower factor prices (comparative advantage), import restraints, rule of law.
  - ◆ Determines how best to attract FDI.

7-26

## Theory of Multinational Corporations

- Internalization Advantage
  - ◆ Finally need a reason why production should be kept within one firm.
  - ◆ Must be something that makes internal transactions better than arm's length.
  - ◆ Examples: impossible to write complete contracts for every possible event, difficult to enforce, risk of opportunistic behavior.

7-27

## Theory of Multinational Corporations

- **Technology transfers:** transfer of knowledge or another form of technology may be easier within a single organization than through a market transaction between separate organizations.
  - ◆ Patent or property rights may be weak or non-existent.
  - ◆ Knowledge may not be easily packaged and sold.

7-28

## Theory of Multinational Corporations

- **Vertical integration** involves consolidation of different stages of a production process.
  - ◆ Vertical integration would involve consolidation of one firm that produces a good that is used as an input for another firm.
  - ◆ May be more efficient than having production operated by separate firms.
  - ◆ For example, having farms and flour mills consolidate into one organization to make flour may be more efficient than if separate.

7-29

## Theory of Multinational Corporations

- What Benefits Can FDI Provide for Host Countries?
  - ◆ Benefits from FDI generally stem from the existence of ownership advantage
  - ◆ Any firm that engages in FDI must be special, have some dimension of superiority (often technology) that offsets the inherent difficulty of operating as a multinational
  - ◆ Possible that local firms may be able to gain from similar ownership advantages

7-30

## Theory of Multinational Corporations

- Easing Technology Transfer
  - ◆ Multinationals may adapt production technologies to local conditions.
  - ◆ Local firms may then have easier time copying adapted technologies.
  - ◆ Workers exposed to technologies may leave to work for local firms.

7-31

## Theory of Multinational Corporations

- Creating Better Jobs
  - ◆ Multinational firms pay higher wages, even controlling for industry, firm size, etc.
  - ◆ Could be creaming (hiring best workers) in part but also use more capital.
  - ◆ Better technologies make workers more productive and their output more valuable.
  - ◆ Workers may be trained to use new technologies, and some training general.

7-32

## Theory of Multinational Corporations

- Linkages From FDI
  - ◆ Forward linkages: added supply lowers cost of intermediates – higher profits for local producers and entry (but possibly lower profit for suppliers and exit)
  - ◆ Backward linkages: added demand raises price of intermediates – higher profits for local suppliers and entry (but possibly lower profit for producers and exit)

7-33

## Theory of Multinational Corporations

- Consumer Benefits
  - ◆ FDI may bring consumer benefits similar to (but beyond) the benefits of opening up to international trade.
  - ◆ Arrival of new varieties or better qualities of products to a market.
  - ◆ Lower prices for consumer goods than if imported, especially in the case of substantial import restrictions.

7-34

## Theory of Multinational Corporations

- What Government Policies Increase Benefits From FDI?
  - ◆ Policies to attract better FDI generally must augment the location advantage, so host country more special.
  - ◆ Important to not tamper with ownership advantage (what makes firm special).
  - ◆ Examples: infrastructure (highways, ports, airports), education (computers and foreign language), national treatment, transparency.

7-35

## Multinational Corporations in the US

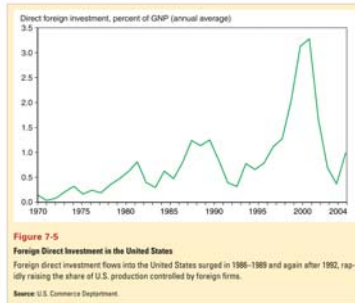
TABLE 7-1 Employment by Foreign-Owned Firms in the United States

|      | As Percent of Total Nonfarm Employment | As Percent of Manufacturing Employment |
|------|--|--|
| 1977 | 1.5                                    | 3.8                                    |
| 2002 | 4.2                                    | 14.6                                   |

Source: U.S. Commerce Department.

7-36

## Foreign Direct Investment in the US



7-37

## Summary

1. A simple model of international labor mobility predicts that labor will migrate to countries with higher labor productivity and higher real wages.
  - ◆ Real wages fall due to immigration and rise due to emigration (labor leaving).
2. Gains from trade in factors as well as goods.

7-38

## Summary

3. Income distribution effects of trade in factors similar to those of trade in goods.
4. International factor movements can substitute for trade.
5. Due to the fact that countries do not produce the same goods, differences in technology and immigration barriers; real wages across countries are far from equal.

7-39

## Summary

6. Multinational corporations undertake foreign direct investment for such reasons as when efficient to
  - ◆ locate production abroad,
  - ◆ internalize technology transfers, and/or
  - ◆ vertically integrate.

7-40